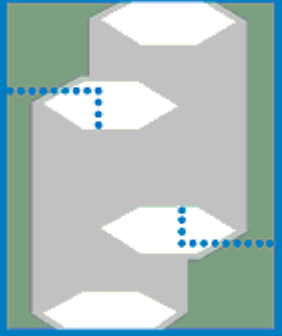


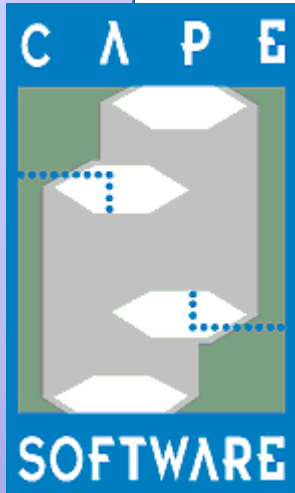
C A P E



SOFTWARE

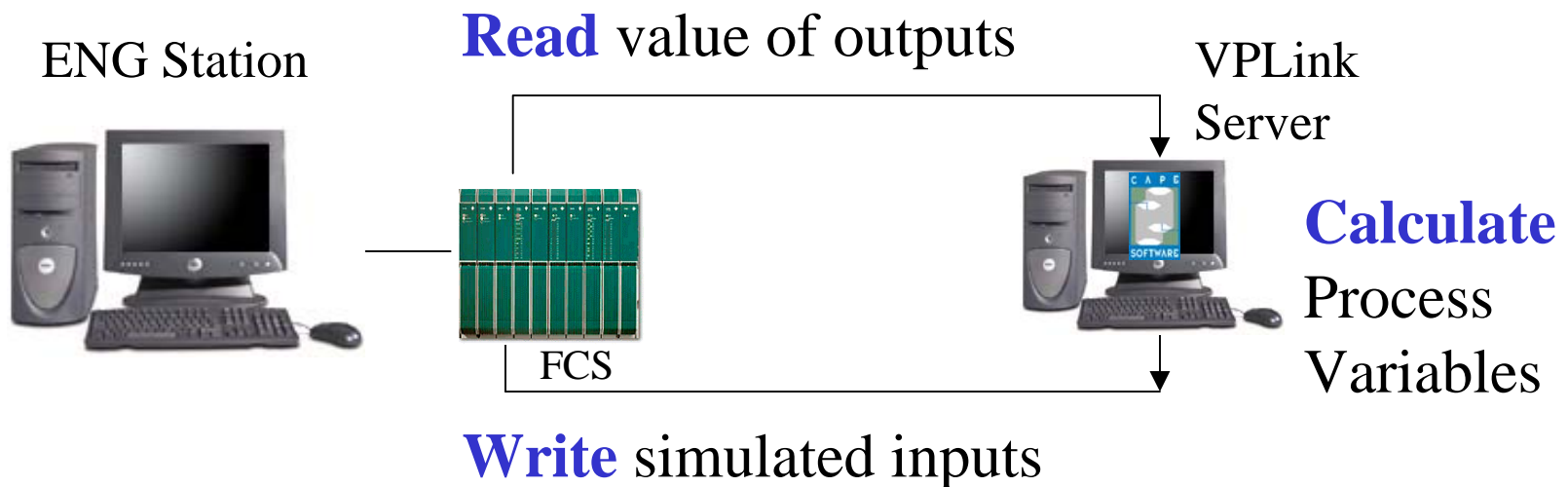
The Virtual Process Overview and Applications

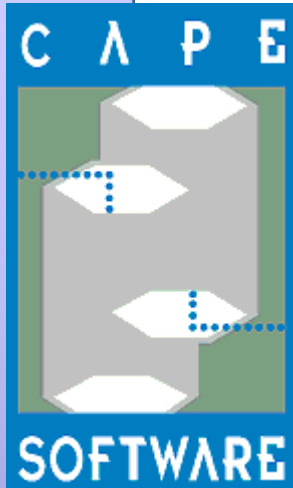
Cape Software Inc.
Cédric OUDINOT



The Virtual Process Loop

- Object Oriented and Tag-based.
- Direct Connect bypasses hardware I/O boards
- Interfaces with real/emulated FCS





Some of our customers...

BASF – many plants across several sites W/W

TOTAL– Vlessingen, Netherlands

Eastman – several systems within Kingsport, TN

Air Products & Chemicals – several systems W/W

ConocoPhillips –San Francisco, CA

ChevronTexaco – Several Sites Licenses

Phillips Refining – Several Sites Licenses

TrunkLine LNG – Baton rouge, LA



BP – several licenses at several sites

Shell Deepwater / Shell Chemicals, UK

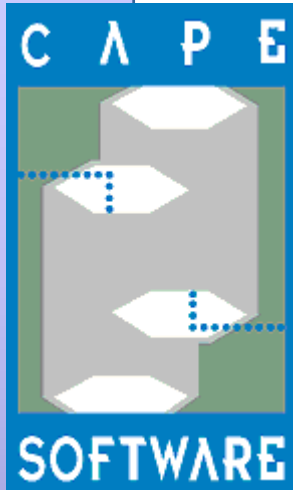
Eli Lilly – Corporate licensing

Genentech – several licenses at different sites

General Mills – W/W licensing

Budweiser – Houston

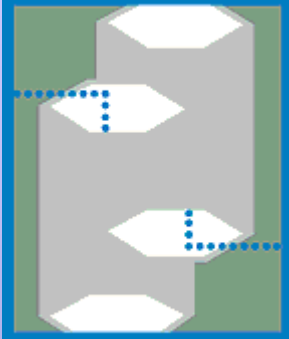
Coors Brewing Company – Several Sites



Supported Systems

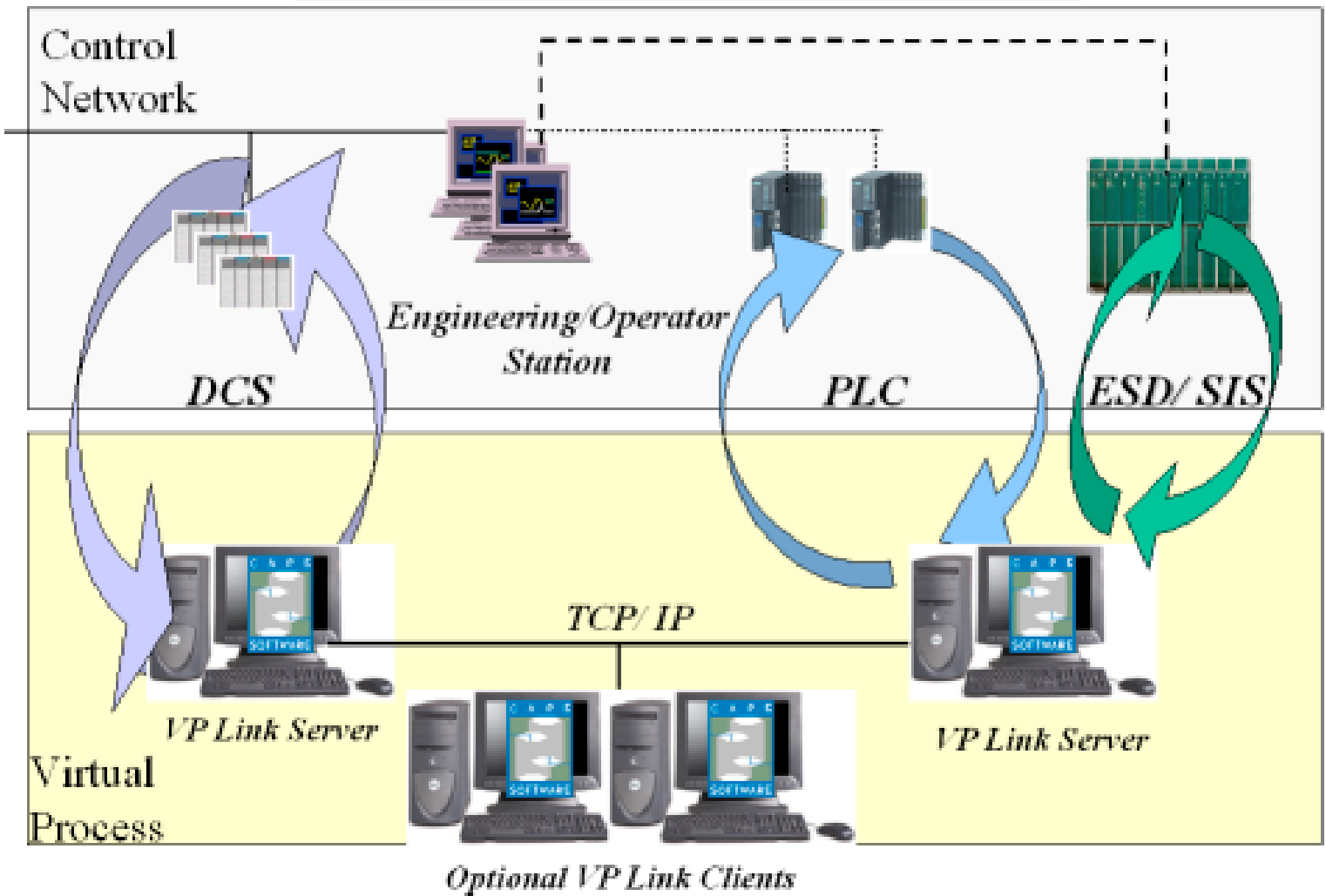
- **Yokogawa CS3000/R3/ ProSafe**
- Foxboro I/A series, Orchestra, A²
- Triconex:Tricon/Trident/Emulator
- Honeywell Experion PKS ,TPS , Honeywell FSC
- Honeywell Plantscape / Rockwell ProcessLogix
- GE Fanuc series 90
- A-B PLC5/SLC500,CLX, Modicon,Siemens-Ti 505
- Siemens APACS, PCS7, S7
- ABB Mod300, Advant
- Etc...

C A P E

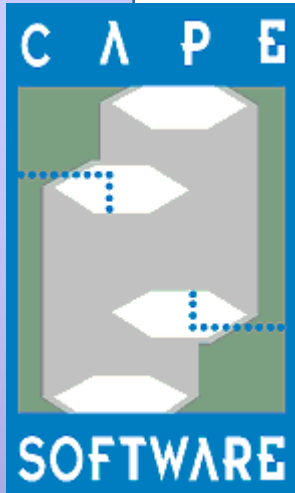


SOFTWARE

VP LINK 3.0 Sample Network



Control Network Systems are solving the logic, responding to simulated VP Link inputs



Different Architectures for different Applications

Integrated Training Setup

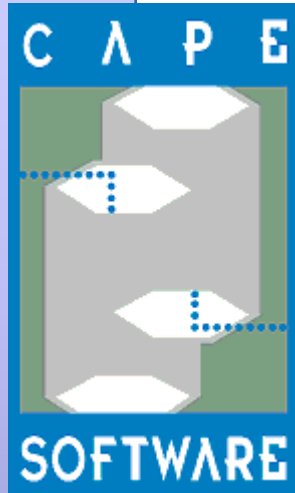


Trainees operate different units,
interacting with each other

Parallel Training Setup



Trainees operate identical units,
in parallel

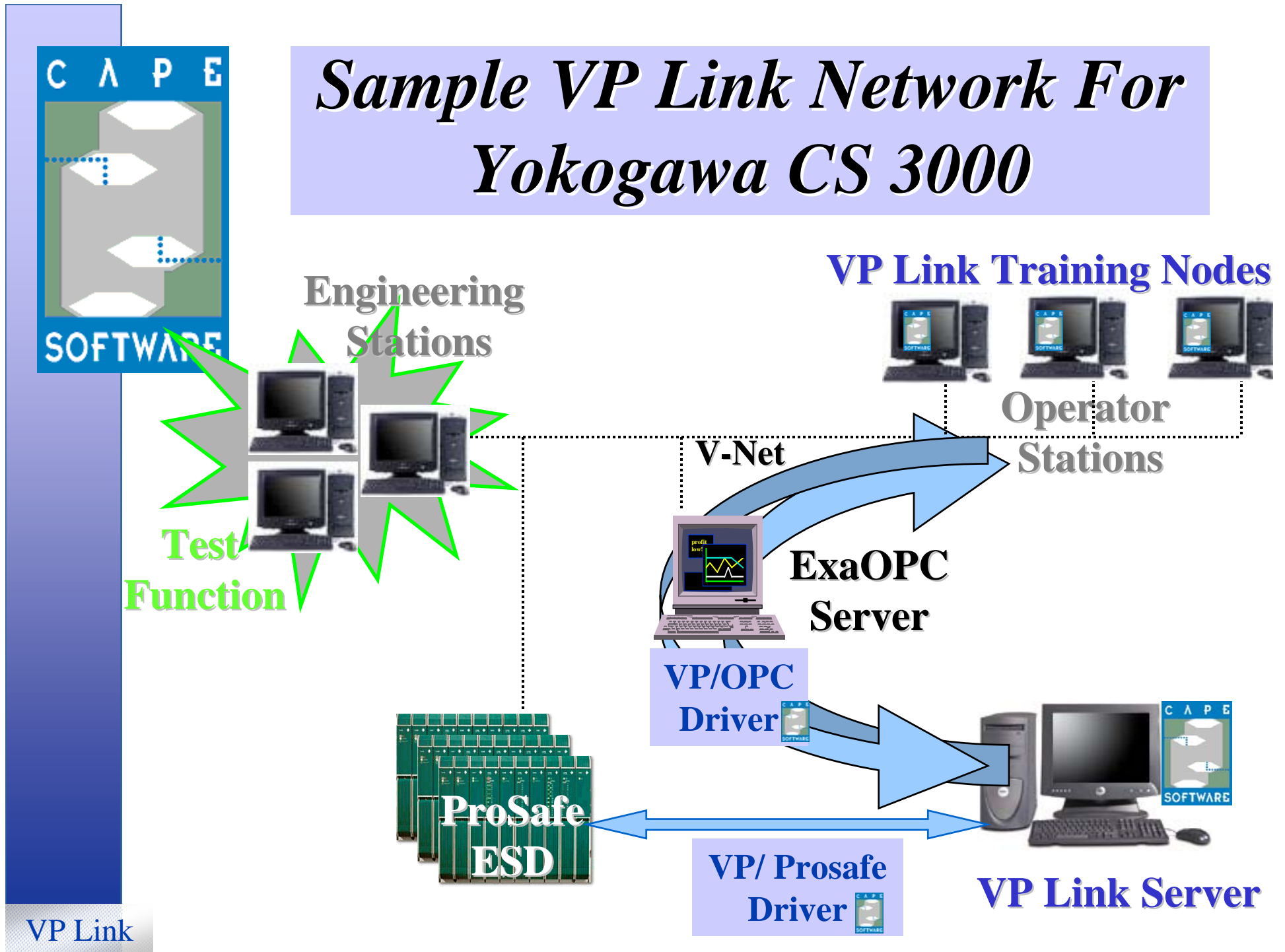


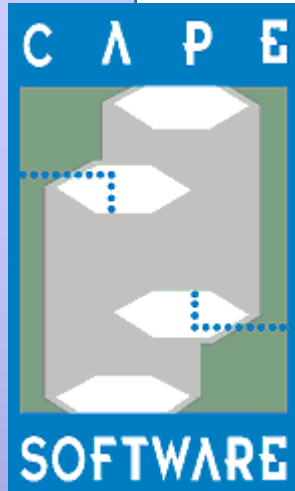
VP Link 3.0

5 steps to simulation

- Extract the control systems I/O images, using platform specific tools
- Import the images in VP Link
- Model the process, using loop templates, algorithms and CalcBlock
- Write training/failure scenarios
- Connect to FCS (Test Function) through OPC

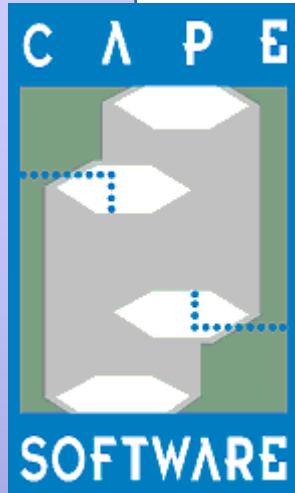
Sample VP Link Network For Yokogawa CS 3000





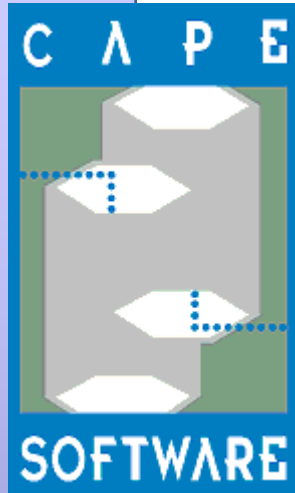
Specifics: VP Link for Prosafe Interface

- Fully Automated Extraction utilities
- Interfaces with emulated controllers(Quadlog/Prosafe) or Real Controllers
- TCP/IP based API driver for high data rate exchange



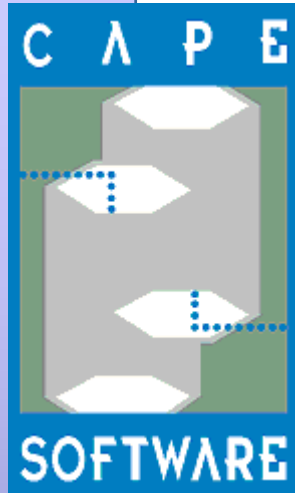
VP Link for CS 3000 Specifics

- Automated Extraction utility for *easy model maintenance*
- HMI Graphics Import in Toolbook for realistic trainer interface
- Fast *OPC* Interface ,over *Ethernet*
- VP Link and Extended Test Function makes it easy to *simulate an entire facility using Off The Shelf Components*
- Utilization of *non-modified actual Control Program*



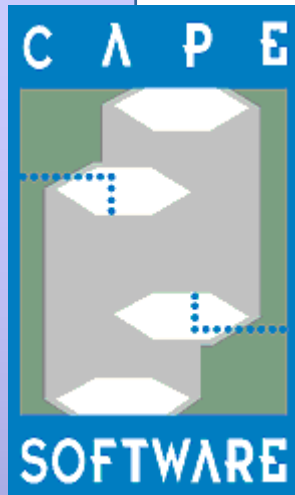
Goals of Operator Training

- Familiarize staff with HMI, Overlays, Navigation, Alarm Pages, Trend Displays
- Utilizing actual Programs / GUI for efficient training
- Exercise Startup / Shutdown Procedures, using simulated ESD for real process trips
- Test Emergency Responses to Faults / Malfunctions / Upsets (Real or Instrumentation)
- Refresher Training or Re-certification
- Track trainee's proficiency (*Scoring Engine*)
- Knowledge Transfer Tool

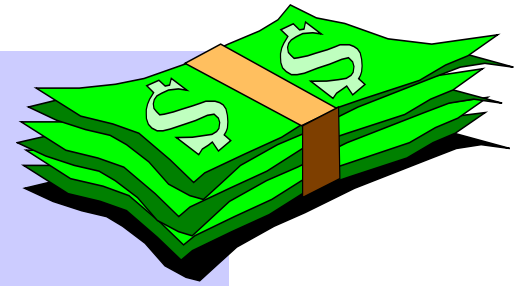


Operator Training System (OTS) using VP Link

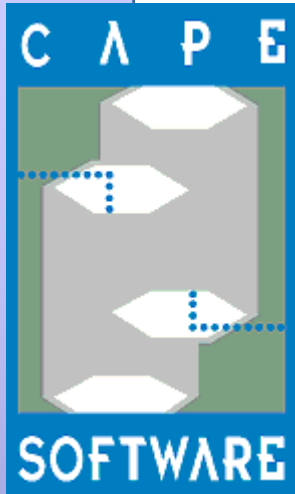
- *Real control program* is used, in same field controllers for realistic control response
- Trainees operate the virtual plant using the real *field consoles, graphics and keyboards*
- *ESD* (Emergency Shutdown Device) is easily integrated in the process model
- *Foxview graphics are imported* in VP Link to offer a intuitive trainer interface
- *High Quality* process modeling tools, simulating the most complex chemical processes
- *Experienced* simulation staff in *Food & Beverage*



Resulting In...



- Reduced start-up time, due to thorough off-line testing of start-up logic.
- Reduced down time, due to on-going logic testing
- Reduced Factory Acceptance Test Time
- Reduced Risk of Equipment Damage
- Reduced Risk of Wasted Product.
- Reduced Risk of Environmental Release.
- **Documented, Validating Operator Sessions Logs**
- **Compliance with IEC/OSHA regulations**



Conclusion

- VPLink solves simulation needs from *simple to sophisticated*, rigorous modeling.
- OTS node can used as an engineering Test Bed system, for *preventive / periodical logic validation*
- *Unattended Real Time* trainee performance logs
- Modeling environment is *flexible, easy to learn and maintain*
- Available *New Version Service* keeps VP Link components up to date, with free technical support
- *Cost Effective* simulation package for *OTS*, using Off the Shelf components for process model and control or emulated control
- *Cross platform* functionalites makes VP Link an *evolutive investment*